

Sub B1

1 1. A device for detecting the presence of an
2 antigen, comprising:
3 a cell having antibodies which are expressed on the
4 surface of the cell and are specific for the antigen to be
5 detected, wherein binding of the antigen to the antibodies
6 results in an increase in calcium concentration in the
7 cytosol of the cell, the cell further having an emitter
8 molecule which, in response to the increased calcium
9 concentration, emits a photon;
10 a liquid medium in which the cell is immersed, the
11 liquid medium receiving the antigen to be detected; and
12 an optical detector arranged for receiving the
13 photon emitted from the cell.

1 2. The device of claim 1, wherein the optical
2 detector is affixed to the liquid medium containing the
3 cells.

1 3. The device of claim 1, wherein the optical
2 detector is a charge-coupled device.

1 4. The device of claim 1, wherein the cell is a
2 B cell.

1 5. The device of claim 1, wherein the cell is a
2 fibroblast.

1 6. The device of claim 1, wherein the antibody is a
2 chimeric antibody.

Sub B2

1 7. The device of claim 1, wherein the antibody is a
2 single-chain antibody.

1 ⁵ 8. The device of claim 1, wherein the emitter
2 molecule is aequorin.

Sub B3
1 9. A device for detecting the presence of two or
2 more antigens, comprising:
3 an array containing a plurality of sectors, each
4 sector containing a cell having antibodies which are
5 expressed on the surface of the cell and are specific for
6 the antigen to be detected, wherein binding of the antigen
7 to the antibodies results in an increase in calcium
8 concentration in the cytosol of the cell, the cell further
9 having an emitter molecule which, in response to the
10 increased calcium concentration in the cytosol, emits a
11 photon;
12 liquid media in which the cell of each sector is
13 immersed; and
14 an optical detector arranged for receiving the
15 photon emitted from the cell;
16 wherein each sector contains a cell having
17 antibodies specific to a different antigen.

Sub B4
1 10. The device of claim 9, wherein the optical
2 detector is affixed to the liquid medium containing the
3 cells.

1 ⁶ 11. The device of claim ⁶9, wherein the optical
2 detector is a charge-coupled device.

1 ~~12. The device of claim 9 wherein the cell is a~~
2 B cell.

1 13. The device of claim 9, wherein the cell is a
2 fibroblast.

1 14. The device of claim 9, wherein the antibody is
2 a chimeric antibody.

Sub 65
1 15. The device of claim 9, wherein the antibody is
2 a single-chain antibody.

1 16. The device of claim ¹⁰9, wherein the emitter
2 molecule is aequorin.

1 17. The device of claim ⁶9, wherein the liquid media
2 receives the antigen to be detected.

1 18. A method for detecting the presence of an
2 antigen, comprising:
3 providing a sample suspected of containing the
4 antigen;
5 introducing the sample into a device containing a
6 cell immersed in a medium, the cell having antibodies which
7 are expressed on its surface and are specific for the
8 antigen to be detected, wherein binding of the antigen to
9 the antibodies results in an increase in calcium
10 concentration in the cytosol of the cell, and the cell
11 further having an emitter molecule which, in response to the
12 increased calcium concentration, emits a photon; and
13 monitoring photon emission as an indication of
14 whether the antigen is present.

1 19. The method of claim 18, wherein the cell is a
2 B cell.

1 20. The method of claim 18, wherein the cell is a
2 fibroblast.

1 21. The method of claim 18, wherein the antibody is
2 a chimeric antibody.

1 22. The method of claim 18, wherein the antibody is
2 a single-chain antibody.

05169196-100998